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PATENT APPLICATION

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Fort Collins, Colorado 80527-2400

ATTORNEY DOCKET NO. 200310621-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): David C. Collins

Confirmation No.: 3351

Application No.: 10/678,476

Examiner: Marc A. Patterson

Filing Date: 10/03/2003

Group Art Unit: 1794

Title: USES OF SUPPORT MATERIAL IN SOLID FREEFORM FABRICATION SYSTEMS

Mail Stop Appeal Brief - Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF REPLY BRIEF

Transmitted herewith is the Reply Brief with respect to the Examiner's Answer mailed on 12/13/2007.

This Reply Brief is being filed pursuant to 37 CFR 1.193(b) within two months of the date of the Examiner's Answer.

(Note: Extensions of time are not allowed under 37 CFR 1.136(a))

(Note: Failure to file a Reply Brief will result in dismissal of the Appeal as to the claims made subject to an expressly stated new ground rejection.)

No fee is required for filing of this Reply Brief.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPELLANT:	David C. Collins	<p>CERTIFICATE OF DEPOSIT UNDER 37 C.F.R. § 1.8</p> <p>I hereby certify that this correspondence is being transmitted via facsimile to the USPTO or being deposited with the United States Postal Service with sufficient postage as first class postage in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.</p> <p><u>2/4/08</u> Date of Deposit</p> <p><i>Leerdo. Whisman</i></p>
SERIAL NO.:	10/678,475	
FILING DATE:	October 3, 2003	
CONF. NO.:	3351	
FOR:	USES OF SUPPORT MATERIAL IN SOLID FREEFORM FABRICATION SYSTEMS	
ART UNIT:	1794	
EXAMINER:	Marc A. Patterson	
DOCKET NO.:	200310621-1	

APPELLANT'S REPLY BRIEF UNDER 37 C.F.R. § 41.41

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
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Sir:

Appellants' submit this Reply Brief in response to the Examiner's Answer mailed on December 13, 2007 in connection with their appeal from the final rejection of the Patent Office, mailed September 14, 2007, in the above-identified application.

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STATUS OF CLAIMS

Claims 1-10 remain pending. Claims 11-20 have been withdrawn from consideration. Thus, the claims on appeal in this application are claims 1-10, which constitute all of the claims presently pending for consideration.

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GROUNDOS OF REJECTION TO BE REVIEWED ON APPEAL

The issue presented for review is: whether claims 1-10 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by Ryan et al (WO 98/21626, hereinafter "Ryan").

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ARGUMENTA. Examiner's Answer

The following numbered paragraphs summarize the Examiner's 102 rejection and the Examiner's response to the Appellants' arguments. The following sections B-D address those arguments that have been presented by the Examiner in response to the Appellants' previous arguments. The Appellants refer the Board of Appeals to the Appeal Brief for a more complete summary of Appellants' positions, as supplemented by the present Reply Brief.

1. In rejecting claim 1, the Examiner alleges Ryan discloses a solid freeform fabrication system for producing a three dimensional object comprising build material configured to be deposited in layers to form a three dimensional object. The Examiner compares Ryan's functionalizing material deposited so as to substantially fill a channel to the build material of the present application. The Examiner further compares a layer of relief forming polymer "providing retaining features" found in Ryan to the support material configured to be deposited adjacent to the build material for supporting the build material during formation of the three dimensional object, and alleges that the predetermined property provided in Ryan is retention.
2. In rejecting claim 2, the Examiner argues that as the claimed aspect is directed to a method limitation, it is given little patentable weight.
3. In rejecting claim 3, the Examiner alleges that the build material of Ryan is UV curable.
4. In rejecting claim 4, the Examiner alleges that the property of retention is a feature according to the claim, and that such retaining feature is filled with build material and therefore defined by the build material, where the "build material" referred to by the Examiner is the functionalizing material as taught in Ryan.

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5. In rejecting claim 5, the Examiner alleges that Ryan discloses a closed cavity that is completely defined by the build material.
6. In rejecting claim 6, the Examiner alleges that Ryan discloses an open cavity that is partially defined by the build material.
7. Regarding claim 7, the Examiner alleges that Ryan discloses a feature comprising a catalyst that is colored with a dye.
8. In rejecting claim 8, the Examiner alleges that the feature disclosed by Ryan imparts conductance in that Ryan notes "provides conductivity enhancement."
9. In rejecting claim 9, the Examiner alleges that non-UV curable build material (i.e. functionalizing material) disclosed in Ryan is transparent to UV radiation and is therefore transparent.
10. In rejecting claim 10, the Examiner alleges the retaining feature disclosed by Ryan is partially or completely filled, and therefore includes additional build material.
11. In response to Appellants' argument that Ryan fails to disclose a feature that provides a predetermined property, other than support, and that retention, the feature identified by the Examiner, is the same as support as used in the context of the present application, the Examiner responds that because the channels in Ryan are formed to provide retaining features wherein the functionalizing material is deposited, the bottom wall of the channel provides support because it is an underlying substrate and the side walls of the channel provide the additional feature of retention because they provide a barrier to side movement of the functionalizing material. Similarly, the Examiner argues that Ryan teaches a channel providing both support and retention.
12. In response to Appellants' argument that material requiring retention is, by definition, not configured for deposition in layers, the Examiner responds that

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Ryan discloses support material and build material that are layers and have therefore been deposited as layers onto a surface, and as such Ryan discloses support material and build material configured for deposition in layers.

13. In response to Appellants' argument that Ryan discloses the use of electroless deposition of functionalizing material to fill a channel with the functionalizing material is not a disclosure of depositing material in layers, the Examiner responds that because Ryan discloses deposition of functionalizing material, Ryan discloses functionalizing material that is configured for deposition in layers, as the deposited material will have finite thickness, length and width.

B. Ryan does not teach a predetermined property other than support

Appellants renew the arguments with respect to Ryan as discussed in the Appeal Brief. Specifically, the Examiner has failed to provide each and every element of the present claim set. The primary difference between the Appellant's position and the Examiner's position is whether the relief forming polymer of Ryan is configured to form a feature that imparts a predetermined property other than support, within the three-dimensional object. More specifically, the differing positions are based on interpreting "retention" as used in Ryan and related to "support" as used in the present application. Appellants have consistently argued that the functionalizing material of Ryan teaches support and does not include a predetermined property other than support. The Examiner argues that because the channels in Ryan are formed to provide retaining features, the bottom wall of the channel provides support because it is an underlying substrate and the side walls of the channel provide the additional feature of retention because they provide a barrier to side movement of the

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functionalizing material. It is the Applicant's view that retention is merely a form of lateral support.

In discussing the support material, the specification notes that it is material being "configured to be deposited adjacent to the build material for supporting the build material during formation of the three-dimensional object." See pg. 7, ln. 1-3, emphasis added. Support material, then, can provide support for the adjacent laterally-arranged build material as well as support for additional layers of build material. Such arrangement, as noted in the specification, is understood to be support, or otherwise encompassed in the term "support," as the specification immediately following notes that the support material can additionally be configured to impart a predetermined property within the object. A review of the specification, therefore, makes clear that support material, as claimed, can provide support to any adjacent material. Naturally, adjacent material can include material laterally-arranged. In such case, and according to the Examiner's word selection, the support material would provide retention.

The specification makes it clear that such support (in any form – base support, lateral support, etc.) is separate from the additional property. The specification, notes that the support material is multi-functional: it provides support (including lateral support such as retention) and provides an additional property. The support provided indicates both support for additional layer deposition as well as support to adjacent and laterally-situated build material, i.e. as a retention function where needed. Therefore, retention is, in fact, support, as used in the context of the present application. The support material of the present application provides support for subsequent build material, deposited in layers, as well as laterally-arranged build material, as needed. In this manner, the usage of support is consistent with plain

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meaning. Furthermore, the relief forming polymer of Ryan fails to provide an additional property.

The Examiner argues that the relief forming polymer in Ryan provides both support and retention in that the bottom wall of a channel provides support as an underlying substrate, and that the side walls of a channel provide retention, which the Examiner reasons is a separate and additional feature. Such distinction between support and retention is unnecessary. Support, as generally used, can be applied in a variety of directions, as with the present application: support can be in a vertical and horizontal manner. Such meaning is consistent with the plain and ordinary meaning of support and further is supported by and consistent with the specification. The support of the present application is, as needed, in both a vertical manner (i.e. supporting layers deposited on top of the support material), and in a horizontal manner (i.e. supporting adjacently-situated build material).

Therefore, retention is not a predetermined property other than support, as required by the present claims, but retention is a support function. It is clear from the specification, and would likewise be clear to one of ordinary skill in the art that, in the context of use of support materials, providing retention is a form of providing support. As such, Ryan does not teach a support material that provides support and a predetermined feature other than support, and thus does not teach each and every element of the presently claimed invention.

As such, Appellants submit that Ryan fails to teach each and every element of the pending claim set, and therefore, Appellants respectfully request that the Board overturn the present rejection.

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C. Ryan does not teach material configured for deposition in layers

Appellants previously argued and continue to hold that material, such as the functionalizing material of Ryan, is not material configured for deposition in layers as such material requires retention. In response, the Examiner argues that Ryan discloses support material and build material that are layers and have therefore been deposited as layers onto a surface, and as such Ryan discloses support material and build material configured for deposition in layers.

The Examiner relates the build material of the present invention to the functionalizing material of Ryan. The functionalizing material, as noted by the Examiner, can be deposited to substantially fill a channel. More specifically, Ryan teaches that the structure can be made by lining the walls and base of channels first with a catalyst. Then, functionalizing material can be deposited by electroless deposition or electroplating to cause the functionalizing material to substantially fill the channels. Ryan p. 23, ln. 16-23. Filling channels, as taught in Ryan, does not teach, expressly or inherently, depositing material in layers. Rather, requiring retention for one type of material, as in Ryan, indicates that the material is incapable of forming a layer, as is required by the present application as to both types of material.

More importantly, the methods utilized in Ryan indicate that the functionalizing material is not configured for deposition in layers to form a three-dimensional object, as taught by the present application. Essentially in Ryan, the channels are formed to provide retaining features wherein the functionalizing material can be deposited to a limit where it substantially fills the channel. This type of processing does not teach a build material configured to be deposited in layers to form a three-dimensional object. A material requiring retention, as in Ryan, is, by

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definition, not configured for deposition in layers. Furthermore, where the functionalizing material of Ryan requires relief features of the alleged support material before deposition, the alleged support material is then not configured to be deposited adjacent to the build material, as required by present claim 1. As the material requires retaining material, and such retention dictates the shape of the functionalizing material, the functionalizing material is not configured for deposition in layers.

The Examiner argues that because the functionalizing material and relief forming polymer of Ryan result in "layers" on a substrate, they are therefore configured for deposition in layers. In response, Appellants submit that the functionalizing material of Ryan would not be in the final form but for the relief forming polymer, and as such, the material is not configured for deposition in layers. The claims specify that both the build material and the support material are configured to be deposited in layers. At best, Ryan teaches a support material configured for deposition in layers, into which form a functionalizing material is deposited, to take the form as defined by the support material.

Therefore, Appellants submit that, in addition to the lack of teaching in Ryan of a feature that imparts a predetermined property other than support, Ryan additionally does not teach the elements of a build material configured to be deposited in layers. As such, Appellants respectfully request the Board to overturn the present rejection.

D. Filling channels is not deposition in layers

In relation to the issue of a build material configured for deposition in layers, is the issue of electroless deposition of functionalizing material to fill a channel with

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the functionalizing material being a disclosure of depositing material in layers. The Examiner's position is that because Ryan discloses deposition of functionalizing material, Ryan discloses functionalizing material that is configured for deposition in layers; as the deposited material will clearly have finite thickness, length and width.

In addition to the above arguments related to the functionalizing material of Ryan being configured for deposition in layers, the Appellant responds by noting that that finite thickness, length and width, to which the Examiner points, is dictated by the relief forming polymer. The functionalizing material does not form a layer across the upper surface of the relief forming material, but is contained within the channels of the relief forming polymer. As the channels dictate the location, thickness, length, and width of the functionalizing material, such material is not configured for deposition in layers.

For this, and the previously-cited reasons, Appellants submit that Ryan fails to teach each and every element of the claims, and as such, a *prima facie* case of obviousness has not been established. Therefore, Appellants respectfully request that the Board overturn the present rejection.

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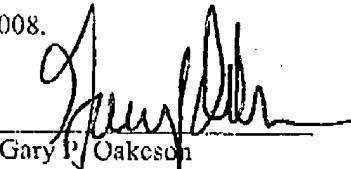
CONCLUSION

Appellants respectfully submit that the claims on appeal set forth in the Appendix of Appellants' Appeal Brief are patentably distinct from the asserted prior art references. Particularly, none of the asserted combinations of references teach each and every element of the claimed invention.

For these reasons, Appellants respectfully request that the Board of Appeals reverse the rejections and remand the case to the Examiner for allowance.

Please charge any fees except for Issue Fee or credit any overpayment to Deposit Account No. 08-2025.

Dated this 4th day of February, 2008.


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